

**ABSTRACT**

An integrated optical detector and diffractive optical element includes a sensing element and a diffractive optical element. The sensing element and diffractive optical element are placed directly into the path of the beam emitted by the light source. The sensing  
5 element monitors the power of a light source, without diverting or reflecting light away from its beam. The diffractive optical element consists of a plurality of thin layers of optically transmissive material stacked on top of one another. An additional layer at the base of the diffractive optical element acts as a sensing element that is responsive to the power of an incident light beam. The response of the sensing element to light includes  
10 photoresistive, photovoltaic, and thermal responses. The sensing element may also be incorporated as part of the optical element. The optical element used with the sensing element may also be refractive or reflective.